SHIKSHA CLASSES

Sub. : Maths	**Answer Paper**	**Marks : 30**
Std. : VIIIth(CBSE)	**9 : Mensuration**	

Section A (Each 1 Mark)

Select the most appropriate answer from the given options (MCQ'S - Q.1 to Q.5)

Q.1 : $1 \text{ cm}^3 =$

Ans : a) 0.000001m^3

Q.2 : **The total surface area of a cylinder of base radius r and height h is**

Ans : a) $2\pi r(h + r)$

Q.3 : **The volume of a cube of edge a is**

Ans : b) a^3

Q.4 : **1m^3**

Ans : d) 1000 litre

Q.5 : **If the height of a cuboid becomes zero, it will take the shape of a**

Ans : d) rectangle

Fill in the blank. (Q.6 to Q.7)

Q.6 : **The total surface area of a cube, when volume is 1 cm^3 is _____ .**

Ans : 6cm^2

Q.7 : **1 Litre = _____ cm^3.**

Ans : 1000

Write whether the following statements are True or False. (Q.8 to Q.9)

Q.8 : **The areas of any two faces of a cuboid are equal.**

Ans : False

Q.9 : **Volume of a cube is 216 cm^3. Its surface area is 216 cm^2.**

Ans : True

Section B (Each 2 Marks)

Q.10 : **Find the height of a cuboid whole volume is 275 cm^3 and base area is 25 cm^2.**

Ans : Volume of cuboid = Base area $\times$ height
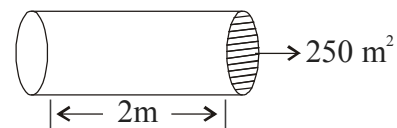
Hence height of the cuboid

$$= \frac{\text{Volume of cuboid}}{\text{Base area}}$$

$$= \frac{275}{25}$$

$$= 11\text{cm}$$

OR

Find the volume of the cylinder.

Ans : Volume of cylinder

$$= \text{Area of base} \times \text{height}$$

$$= 250 \times 2$$

$$= 500 \text{ m}^3$$

Q.11 : **Find the side of a cube whose total surface area is 600 cm^2.**

Ans : Let side of a cube = a cm

So, Total surface area = $6a^2$

Therefore, $6a^2 = 600$

$$a^2 = 100$$

$$a = 10 \text{ cm}$$

Section C (3 Marks Each)

Q.12 : A cuboid is of dimensions 60cm × 54 cm × 30 cm How many small cubes with side 6 cm can be placed in the given cuboid?

Ans : Volume of cuboid = $60\,cm \times 54\,cm \times 30\,cm^3$

$$= 97200\ cm^3$$

Volume of a small cube

$$= 6 \times 6 \times 6\ cm^3$$

$$= 216\ cm^3$$

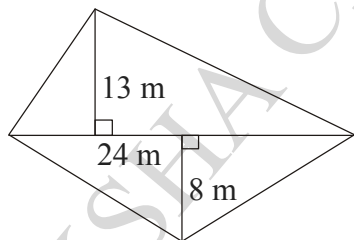∴ Number of small cubes that can be placed in the given cuboid

$$= \frac{\text{Volume of the cuboid}}{\text{Volume of a small cube}}$$

$$= \frac{97200}{216} = 450$$

Hence, 450 small cubes can be placed in the given cuboid.

OR

The diagonal of a quadrilateral shaped field is 24m and the perpendiculars dropped on it from the remaining opposite vertices are 8m and 13m. Find the area of the field.

Ans : Area of the field $= \dfrac{1}{2} \times d\left(h_1 + h_2\right)$

$$= \frac{1}{2} \times 24 \times \left(8 + 13\right)$$

$$= \frac{24 \times 21}{2} = 12 \times 21$$

$$= 252\ m^2$$

Q.13 : In a building there are 24 cyindrical pillars. The radius of each pillar is 28 cm and the height is 4m.Find the total cost of painting the curved surface area of all pillars at the rate of Rs. 8 per m².

Ans : Radius of cylindrical pillar (r) = 28cm

$$= 0.28\ m$$

height (h) = 4 m

Curved surface area of a cylinder $= 2\,\pi\,rh$

Curved surface area of a pillar

$$= 2 \times \frac{22}{7} \times 0.28 \times 4$$

$$= 7.04\ m^2$$

Curved surface area of 24 such pillar

$$= 7.04 \times 24 = 168.96\ m^2$$

Cost of painting an area of 1m²

= ₹ 8

Therefore, Cost of painting 168.96 m²

$$= 168.96 \times 8$$

$$= ₹\ 1351.68$$

Q.14 : Find the height of the cylinder whose volume is 1.54m³ and diameter of the base is 140 cm.

Ans : Diameter of the base = 140 cm

∴ Radius of the base $= \dfrac{140}{2} = 70$ cm

i.e. r = 70 cm

$$= 0.7\ m$$

Volume of cylinder = 1.54 m³

vol. of cylinder = Area of base × height

∴ Height of the cylinder

$$= \frac{\text{Volume of the cylinder}}{\text{Area of the base of the cylinder}}$$

$$= \frac{1.54}{\dfrac{22}{7} \times 0.7 \times 0.7}$$

$$= \frac{154}{22 \times 7}$$

$$= \frac{154}{154} = 1 \text{ m}$$

Hence, the height of the cylinder is 1 m

Section D (Each 4 Marks)

Q.15 : **The floor of a building consists of 3000 tiles which are rhombus shaped and each of its diagonals are 45cm and 30cm in length Find the total cost of polishing the floor, if the cost per m² is ₹ 4.**

Ans : Area of a tile $\quad = \frac{1}{2} \times d_1 \times d_2$

$$= \frac{1}{2} \times 45 \times 30$$

$$= 675 \text{ cm}^2$$

Area of the floor $\quad = 675 \times 3000 \text{ cm}^2$

$$= 2025000 \text{ cm}^2$$

$$= \frac{2025000}{100 \times 100} \text{ m}^2$$

$[\because 1\text{m}^2 = 100 \times 100 \text{ cm}^2]$

$$= 202.50 \text{ m}^2$$

$\because$ The cost of polishing per m²
$= ₹ 4$

$\therefore$ Total cost of polishing the floor
$= 202.5 \times 4$
$= ₹ 810$

Hence, the total cost of polishing the floor is ₹ 810.

OR

A milk tank is in the form of cylinder whose radius is 1.5m and length is 7m. Find the quantity of milk in litres that can be stored in the tank.

Ans : For milk tank

$$r = 1.5 \text{ m}$$

$$h = 7 \text{ m}$$

$\therefore$ Capacity $= \pi r^2 h$

$$= \frac{22}{7} \times 1.5 \times 1.5 \times 7$$

$$= 49.5 \text{ m}^3$$

$$= 49.5 \times 1000 \text{ litre}$$

$[\because 1\text{m}^3 = 1000 \text{ litre}] = 49500 \text{ litres}$

Hence, the quantity of milk that can be stored in the tank is 49500 litres.

Q.16 : **Water is pouring into a cuboidal reservoir at the rate of 60 litres per minute. If the volume of reservoir is 108m³. Find the number of hours it will take to fill the reservoir.**

Ans : Volume of reservoir

$$= 108\text{m}^3$$

$$= 108 \times 1000$$

$$= 108000 \text{ litres}$$

$[\because 1\text{m}^3 = 1000 \text{ litre}]$

Water poured per minute = 60 litres

$\therefore$ Time taken to fill the reservoir

$$= \frac{\text{Volume of the reservoir}}{\text{Water poured per minute}}$$

$$= \frac{108000}{60} \text{ m}$$

$$= \frac{108000}{60 \times 60} \text{ hours}$$

$$= 30 \text{ hours}$$

Hence, the number of hours it will take to fill the reservoir is 30.

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